PROCEEDINGS OF THE ROYAL ENTOMOLOGICAL SOCIETY OF LONDON

SERIES C. JOURNAL OF MEETINGS

VOLUME 25 No. 3, 1960

ORDINARY MEETING

WEDNESDAY, 4th MAY, 1960, at 5.30 p.m. (Tea 5 p.m.)

AGENDA

1. Confirmation of the Proceedings of the Ordinary Meeting held on 6th April, 1960.
2. Recommendations of candidates for Fellowship. First reading.
3. Recommendations of candidates for Fellowship. Second reading.
4. Announcement of election of new Fellows.
5. Additions to the Library [see p. 12].
6. Admission of Fellows.
7. Papers accepted for publication in the *Transactions*.
8. Exhibits.
9. Communications.

1. **Dr. C. G. Butler**

Further work on queen substance

[ABSTRACT]

The existence of queen substance was first suggested in 1954 as a result of experiments on the production of emergency queens by colonies of honeybees whose queens had been removed. Since then this material has been extracted from the bodies of queens and has been shown to be produced in their mandibular glands.

A rapid and fairly sensitive method of bio-assay of queen substance has been developed. This has helped in its isolation and purification, and has also made it possible to show that queen-rearing in connection with queen supersedure and with swarming from uncrowded colonies is due to shortage of queen substance.

2. **Dr. T. R. E. Southwood** and **Dr. R. E. Blackith**

Inter- and intra-specific variation in the mirid genus *Plagiognathus*

[ABSTRACT]

In papers published in 1941 and 1949 E. Wagner split *Plagiognathus albipennis* (Fallén) into four species on the basis of host plant, colour, genitalia and claw structure and ratios of certain measurements. As a result of a study of both museum and reared material it is proposed to recognise only one of Wagner's new species, *P. collinus*. The original species, *P. albipennis*, according to the new concept, exhibits an association between size and a number of other characters, the largest individuals being darker

and having certain structures of the genitalia particularly long and curved, which is probably an example of allometric growth. *P. collinus*, although smaller than any *P. albipennis*, is extremely dark and the structure of its genitalia lies outside the range of *P. albipennis*.

It seems that *P. albipennis* exhibits considerable intra-specific variation, different forms occurring on different host plants. Multivariate morphometric analysis has shown that these differences contain two components : one which can be accounted for by the plant's environment and the other related directly to differences of host plant. In addition to these extrinsic factors the transfer of a population from one host to another seems to select genotypes which were in a minority on the original host. Thus the tentative conclusion is that differences between the forms of *P. albipennis* on different plants are attributable to the selection of certain genotypes on each host, together with the modifying effect of the ambient and plant environment.

NOTICES

A film made by the **South African Institute for Medical Research,** entitled " Dipterous parasites of game, and the preservation of wild life in Northern Rhodesia " will be shown in the Lecture Hall of the British Museum (Natural History) on *Tuesday*, 24*th May*, at 4.30 p.m.

Dr. F. Zumpt, of the Institute, will introduce the film.

The next meeting will be held on *Wednesday*, 1*st June*, 1960 :

(1) **Professor Howard A. Schneiderman** (a visitor).—The distribution in nature of substances with juvenile hormone activity and its possible significance.

(2) **Dr. J. W. Evans.**—Some Homoptera of outstanding interest.

PROCEEDINGS OF THE ORDINARY MEETING HELD ON 6TH APRIL, 1960

Professor D. S. BERTRAM, Vice-President, in the Chair

Present, 85 Fellows and 19 Visitors

The minutes of the Ordinary Meeting held on 2nd March, 1960, were confirmed and signed by the Vice-President.

The names of the following candidates for election were read for the first time : Mr. Henry James Berman ; Mr. Albert Catley, B.Sc. ; Mr. Ernest Dearing, B.Sc. ; Mr. Jan Heeg, B.Sc. ; Mr. Vincent Clifford Moran, B.Sc. ; and Mr. John Frederick Thompson.

For the second time (taken as read) : Mr. Elwy Abdel Rahman Atalla ; Dr. Mohammed Sultan Khan Ghauri, Ph.D., D.I.C. ; Mr. James Andrew Grant ; Mr. Peter Michael Hammond ; Mr. Mumtaz Ahmad Khan, M.Sc. ; Mr. Muhammad Rafiq Khan ; Mr. William Frederick Nolde ; Dr. Philip Osborne ; and Mr. John Philip Spradbery.

The Secretary read the names of the following newly elected Fellows of the Society : Group Captain Lawrence Washington Burgess, R.A.F.(Retd.), B.A., Knoleforth, North Weirs, Brockenhurst, Hants. ; Mr. David Galley, 3 Yew Tree Road, Southborough, Tunbridge Wells, Kent ; Mr. Peter David Harris, 41 Daneswell Drive, Moreton, Wirral, Cheshire ; Mr. Anthony John Oliver, 69 Wish Road, Hove, 3, Sussex ; Mr. Gordon Pritchard, 63 Monk Street, Tutbury, Burton-on-Trent, Staffs. ; Mr. Stanley Arthur Richardson, Chapter House, Chilbolton Avenue, Winchester, Hants. ; Mr. Louis John Saliba, B.Sc., B.Pharm., 25 New Street, Floriana, Malta ; and Mr. Ronald John Spittle, 32 Malvern Road, Powick, Worcs.

Thanks were voted to donors of gifts to the Library since the last meeting.

Mr. Bruce Ing, Mr. P. E. King, Mr. R. D. MacCuaig, and Mr. J. B. Sardesai signed the Obligation Book and were admitted Fellows of the Society.

Dr. J. E. Harker gave a paper on the role of the internal clock and **Mr. P. F. Mattingly** a paper on cyclical activities in mosquitoes, abstracts of which appeared on pages 5 and 6.

The papers were followed by a combined discussion.

The Vice-President said that Mr. K. A. Spencer, who was unable to attend the meeting, had sent the following communication :

" On two occasions I have obtained numerous puparia of Agromyzidae in South America and flown back to London before the flies in most cases had emerged. In London the flies emerged not, as is usual, around 7 or 8 in the morning, but quite regularly between 12 and 2. They had thus failed to make any adjustment for the substantially earlier dawn in their new environment."

Dr. K. Mellanby described a natural infestation of cockroaches and bedbugs. The cockroaches appeared and were active just after sunset every 24 hours, but the bedbugs showed quite different though constant peaks just before dawn every 3–4 days. These natural cycles continued for at least a week in total darkness, but in constant light the rhythm was interrupted, which was not the same result as obtained by Dr. Harker, who did not provide dark niches. In continual light the cockroaches never appeared but the bedbugs eventually had to come out for food. It seemed as if the " clock " was giving a stimulus which might or might not be acted on depending on other stimuli. The feeding rhythms of blood sucking insects, such as bedbugs or mosquitoes, are quite different in that they are controlled by temperature—a bug at 30° C. feeds every 3 days, at 20° C. every 6 days—whereas the true clocks (which control the actual time on the third or on the sixth day at which they feed) are independent of temperature.

Dr. Mellanby then asked Dr. Harker whether the position of the low temperature which " stopped the clock " could be altered by acclimatisation of the cockroach in the way the chill coma temperature can be altered. Dr. Harker replied that this was not known.

Dr. Harker said, in reply to a question as to whether mechanical stimulation affected the clocks, that while excessive locomotory activity, for example, might result in changes in the general level of activity, the cycles were basically unaffected.

In reply to an enquiry by Mr. G. A. H. McClelland whether the collective rhythm shown by a population was strictly comparable to that shown by an individual insect, Dr. Harker said that insects in colonies sometimes got out of phase with each other and thus appeared to lack rhythm.

Dr. Harker continued, in reply to an enquiry, that the reaction of the clock to reversed illumination was to re-set itself quite suddenly.

Mr. M. E. Solomon suggested that the clock effect might be produced by a substance accumulating in the cells being used up and thus the term " internal hour-glass " might be more suitable than " clock ". It was possible to imagine a pair of enzymes, one activatory and one inhibitory, and this might explain why internal clocks are independent of temperature. He also pointed out that some cycles were very long—work on the carpet beetles had shown a yearly cycle.

Mr. G. Surtees asked whether the progressive modification of rhythmic patterns could be the basis of the evolution of a species. Mr. Mattingly said that *Anopheles gambiae* and *Anopheles hargreavesi* had very similar biting cycles, differing mainly in being staggered by about one hour. *Aëdes aegypti* and *Aëdes africanus* showed similar differences and resemblances. It could be thought that this suggested a basic *Myzomyia* pattern and a basic *Stegomyia* pattern with superimposed specific differences of the order indicated.

Referring to the remarks by Mr. Solomon on the possibility that the timing mechanism was some additive process, Dr. C. G. Johnson suggested that it might be possible to subject the suboesophageal ganglion to different temperatures, beginning the treatment when the ganglion was in the inactive stage and finding out how long it took at the different temperatures for it to become active. It might then be possible to assess time of activity of the insects on a basis of temperature summation and light thresholds. This might show whether a process of summation is involved as far as the neurosecretory cells are concerned. Dr. Harker replied that this could possibly be done, except for the fact that the ganglion was not temperature dependent; above 3 or 4° C. the period required for it to start operating was the same over a wide range of temperatures.

In reply to a question on how the a-rhythmic cockroach differed from the inactive rhythmic one, Dr. Harker referred to recent experiments in implanting a suboesophageal ganglion twelve hours out of phase in another individual; a tumour rapidly developed and the animal showed a dual rhythm.

Mr. Mattingly said he felt there were interesting resemblances between the tumour and virus situations and this was a very promising field for further research.

PAUL FREEMAN, *Honorary Secretary.*

ADDITIONS TO THE LIBRARY

Presented

Arthur, D. R. *Ticks: a monograph of the Ixodoidea.* Pt. 5. 8vo. Cambridge: Univ. Pr., 1960. [The Publishers.]

Cave Research Group of Great Britain. *Fauna collected from caves as recorded in the C.R.G. Fauna Records.* Pt. 5. (1950–53). flscp. Berkhamsted, 1960. [Brigadier E. A. Glennie.]

Christophers, *Sir* S. R. *Aëdes aegypti (L.) the yellow fever mosquito: its life history, bionomics and structure.* 4to. Cambridge: Univ. Pr., 1960. [The Publishers.]

[Medvedev, S. I. *Coleoptera.* Tom. X, no. 4. *Scarabaeidae: Euchirinae, Dynastinae, Glaphyrinae, Trichiinae.*] 8vo. Moscow & Leningrad, 1960. [*Fauna SSSR* (n.s.) **74**.] [Academy of Sciences of the U.S.S.R., by Exchange.]

Purchased

Bechyne, J. Beiträge zur Kenntnis der Alticidenfauna Boliviens. Coleopt. Phytoph. *Beitr. neotrop. Fauna* **1**: 269–381, 1959.

Chamberlin, W. J. *The Scolytoidea of the north west: Oregon, Washington, Idaho and British Columbia.* 8vo. Corvallis: Oregon St. Coll. Pr., 1958. [*Oregon St. Coll. Monogr. (Ent.)* **2**.]

Lisney, A. A. *A bibliography of British Lepidoptera,* 1608–1799. 8vo. London: Chiswick Pr., 1960.

Roback, S. *The immature Tendipedids of the Philadelphia area (Diptera: Tendipedidae).* 8vo. Philadelphia, 1957. [*Monogr. Acad. nat. Sci. Philad.* **9**.]

In addition, separates have been presented by Dr. J. L. Cloudsley-Thompson; United States Department of Agriculture; Anti-Locust Research Centre; Dr. T. Clay; Dr. C. A. Edwards; Ministry of Agriculture, Tolworth; Miss P. L. Robertson; Mr. T. Lewis; Mr. N. C. E. Miller; Mr. J. E. H. Blackie; Miss D. J. Jackson; Mr. R. H. C. Sweeney; Mr. A. Lea; Companhia de Diamantes de Angola; Professor J. Lane; Colonial Termite Research Unit; Prof. J. Chester Bradley; Tsetse Control Department, Entebbe; Mr. G. Surtees and the West African Timber Borer Research Unit.

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